

IN THE CLAIMS

1-23. (withdrawn)

24. (original) A composition for use in preparing a catalytically active solid, said composition comprising:

(A) water in a quantity sufficient to provide a shaped foraminous catalyst mixture;

(B) catalytically active metals useful in chemically refining hydrocarbons, said metals in the form of at least one component providing at least one metal from Group VIB of the periodic table and at least one component providing at least one metal from Group VIII of the periodic table, wherein the molar ratio of said Group VIII metal to Group VIB metal is about 0.05 to about 0.45, and wherein said Group VIII metal component is provided by a substantially water insoluble component; and

(C) at least one substantially water-soluble phosphorous-containing acidic component in an amount sufficient to provide a phosphorous to Group VIB molar ratio of about 0.05 to about 0.25; and

(D) at least one uncalcined foraminous catalyst carrier.

25. (original) A composition according to claim 24 further comprising up to about 5 wt.% of an aqueous nitric acid component.

26. (original) A composition according to claim 24 wherein said Group VIII component is selected from the group consisting of a nickel carbonate and a cobalt carbonate.

27. (original) A composition according to claim 24 further comprising an additional amount of an element from Group VIII in the form of a substantially water soluble component.

28. (original) A composition according to claim 27 wherein the molar ratio of total Group VIII metal to Group VIB metal is about 0.05 to about 1.0.

29. (original) A composition according to claim 28 wherein the molar ratio of total Group VIII metal to Group VIB metal is about 0.20 to about 0.95.

30. (original) A composition according to claim 28 wherein the molar ratio of total Group VIII metal to Group VIB metal is about 0.30 to about 0.9.

31. (original) A composition according to claim 27 wherein said Group VIII component is a nickel nitrate.

32. (original) A composition according to claim 24 wherein said phosphorous-containing acidic component is orthophosphoric acid.

33. (original) A composition according to any one of claims 24 or 32 wherein said acidic component is present in an amount to provide a phosphorous to Group VIB molar ratio of about 0.05 to about 0.25.

34. (original) A composition according to claim 33 wherein said molar ratio of phosphorous to Group VIB metal is about 0.07 to about 0.23.

35. (original) A composition according to claim 34 wherein said molar ratio of phosphorous to Group VIB metal is about 0.08 to about 0.20.

36. (original) A composition according to claim 34 wherein said molar ratio of phosphorous to Group VIB metal is about 0.09 to about 0.18.

37. (original) A composition according to claim 26 wherein said Group VIII component is nickel carbonate.

38. (original) A composition according to any one of claims 24 through 32 and 37 wherein said Group VI metal is selected from molybdenum or tungsten.

39. (original) A composition according to claim 38 wherein said Group VI metal is molybdenum.

40. (original) A composition according to claim 24 wherein said molar ratio of Group VIII metal to Group VIB metal is about 0.05 to about 0.40.

41. (original) A composition according to claim 40 wherein said molar ratio is about 0.05 to about 0.30.

42. (original) A composition according to claim 40 wherein said molar ratio is about 0.10 to about 0.25.

43. (original) A composition according to claim 24 wherein the concentration of said Group VIB metal is at least about 3 to about 50 weight percent.

44. (original) A composition according to claim 24 wherein the concentration of said Group VIB metal is about 26 to about 46 weight percent.

45. (original) A composition according to claim 44 wherein the concentration of said Group VIB metal is at least about 28 to about 42 weight percent.

46. (original) A composition according to claim 24 wherein the concentration of said Group VIB metal is about 3 to about 6 weight percent.

47. (original) A composition according to claim 46 wherein the concentration of said Group VIB metal is at least about 3.5 to about 5.5 weight percent.

48. (original) A composition according to claim 43 wherein the concentration of said Group VIB metal is at least about 12 to about 48 weight percent.

49. (original) A composition according to any one of claims 24 through 32 and 37 wherein said foraminous catalyst carrier is at least one member selected from the group consisting of silica, silica-gel, silica-alumina, alumina, titania, titania-alumina, zirconia, boria, terrana, kaolin, magnesium silicate, magnesium carbonate, magnesium oxide, activated carbon, aluminum oxide, precipitated aluminum oxide, activated alumina, bauxite, kieselguhr, pumice, natural clays, synthetic clays, cationic clays or anionic clays such as saponite, bentonite, kaolin, sepiolite or hydrotalcite, and mixtures thereof.

50. (original) A composition according to any one of claims 24 through 32 and 37 wherein said foraminous catalyst carrier is selected from the group consisting of alumina, silica, silica-alumina, titania, titania-alumina, zirconia, natural clay, synthetic clay, and mixtures thereof.

51. (original) A composition according to claim 50 wherein said foraminous catalyst carrier is at least one member selected from the group consisting of silica, silica-alumina, alumina, natural clays, synthetic clays, and mixtures thereof.

52. (original) A composition according to claim 51 wherein said foraminous catalyst carrier is alumina.

53-79. (withdrawn)

80. (currently amended) A catalyst prepared by impregnation of a catalyst carrier with a stabilized aqueous composition according to any one of claims ~~1 through 20 and 24~~ through 32 and including the step of separating the volatile portion of said solution from the impregnated uncalcined carrier to obtain a dried catalyst having a desired moisture content.

81. (original) The catalyst according to claim 80 wherein said carrier is selected from the group consisting of alumina, silica, silica-alumina, natural clay, synthetic clay and mixtures thereof.

82. (original) The catalyst according to claim 81 wherein said carrier is alumina.

83. (original) The catalyst according to claim 80 and further including the step of forming or shaping the impregnated catalyst carrier.

84. (original) The catalyst according to any one of claims 80 to 83 and further including the step of calcining the dried catalyst.

85. (original) A catalyst useful in hydroprocessing a petroleum feed, said catalyst comprising at least one catalytically active metal from Group VIB of the periodic table, at least one catalytically active metal from Group VIII of the periodic table, and phosphorous, wherein said metals and phosphorous are carried on a foraminous carrier, wherein the pore mode is about 40 to about 90Å, wherein the loss in weight

on ignition at 1000°F to 1200°F of said catalyst is less than about 5 wt.% based on the weight of the catalyst, and wherein the ASI ratio is greater than about 0.75 to about 2.0.

86. (original) A catalyst useful in hydrodesulfurization, hydrodenitrification and hydrodemetallation of heavy hydrocarbons, said catalyst comprising at least one catalytically active metal from Group VIB of the periodic table, at least one catalytically active metal from Group VIII of the periodic table, and phosphorous, wherein said metals and phosphorous are carried on a foraminous carrier, wherein the pore mode is about 40 to about 90Å, wherein the loss in weight on ignition at 1000°F to 1200°F of said catalyst is less than about 5 wt.% based on the weight of the catalyst and wherein the ASI ratio is greater than about 0.75 to about 2.0.

87. (original) A catalyst characterized by its ability to hydrotreat a charge hydrocarbon feed containing components boiling above 1000 °F, and sediment-formers, sulfur compounds, metals, asphaltenes, carbon residue, and nitrogen compounds, said catalyst comprising at least one catalytically active metal from Group VIB of the periodic table, at least one catalytically active metal from Group VIII of the periodic table, and phosphorous, wherein said metals and phosphorous are carried on a foraminous carrier, wherein the pore mode is about 40 to about 90Å wherein the loss in weight on ignition at 1000°F to 1200°F of said catalyst is less than about 5 wt.% based on the weight of the catalyst and wherein the ASI ratio is greater than about 0.75 to about 2.0.

88. (original) The catalyst as in any one of claims 85, 86 and 87 wherein said catalyst has been pre-impregnated, shaped, dried and calcined.

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89-100. (withdrawn)